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Duke University Research Shines Light on PFAS Contamination in Burlington's Haw River Watershed

Legal action by Haw River Assembly and Southern Environmental Law Center (SELC) used this research to help stop previously undetectable PFAS pollution sources from contaminating the Haw River and protect downstream communities.

Bynum, N.C. | Duke University's Environmental Analytical Chemistry Lab has published their research about the source of widespread PFAS contamination in North Carolina's Haw River watershed. The research and analysis, led by Duke professor Lee Ferguson and PhD student Patrick Faught and published in Environmental Science & Technology Letters, helped Haw River Assembly to pinpoint Burlington's PFAS sources and solve the problem in 2023 that was threatening drinking water for downstream communities.

In 2019, the Southern Environmental Law Center, on behalf of the Haw River Assembly, notified the City of Burlington of its intent to sue over PFAS pollution. The resulting agreements required Burlington to investigate pollution sources in its sewer system using novel analytical methods. The legal tools developed through this process can now provide a guide for other communities dealing with PFAS contamination.

"Dr. Ferguson's work was instrumental in our work to stop PFAS pollution from the source in Burlington. Without this type of analysis, communities downstream would still be exposed to toxins that were not previously detected." said Emily Sutton, Executive Director and Haw Riverkeeper with Haw River Assembly. ***"We can confidently say that these toxins, even in their precursor forms, have been reduced by the industries responsible for discharging them."***

The study traced the contamination to textile manufacturing facilities in Burlington. Standard testing methods could not previously detect these solid nanoparticle PFAS precursors. They transform into detectable PFAS during wastewater treatment or after release into the environment. Their analysis method allowed for the detection of smaller PFAS precursors, which allowed us to track them at the source of discharge, before they end up in the wastewater treatment process.

This analysis allows us to track the sources of these smaller PFAS compounds. As a result, we have seen a dramatic decrease, from 33,000 parts per trillion(ppt) to approximately 500ppt, since Burlington's cooperation with Haw River Assembly, SELC and the textile manufacturers. Communities downstream, including Pittsboro, have seen significant improvements in their drinking water quality.

This work was performed in collaboration with the Southern Environmental Law Center and the Haw River Assembly and conducted through the North Carolina PFAS Testing Network, supported by an award from the North Carolina Collaboratory with funding appropriated by the North Carolina General Assembly.

The study, published November 18, 2025, is titled "Colloidal Side-Chain Fluorinated Polymer Nanoparticles Are a Significant Source of Polyfluoroalkyl Substance Contamination in Textile Wastewater," by Patrick W. Faught, Marzieh Shojaei, Abigail S. Joyce, and P. Lee Ferguson. <https://www.eurekalert.org/news-releases/1106928>

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The Haw River Assembly is a 501(c)(3) non-profit citizens' group founded in 1982 to restore and protect the Haw River and Jordan Lake, and to build a watershed community that shares this vision. Our goals are to promote environmental education, conservation and pollution prevention; to speak as a voice for the river in the public arena; and to put into peoples' hands the tools and the knowledge they need to be effective guardians of the river.